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ABSTRACT

This paper discusses the impact national initiatives have had on individual higher education libraries in the United Kingdom (UK). Written from the perspective of an institutional library manager, the paper examines the interface between local electronic library provision and national developments. Individual institutions have been active in taking forward the electronic library agenda both with and without earmarked government funding, but often the way in which this has been managed has been strongly influenced by the national strategy. The practical challenge has been to integrate locally provided digital resources with national resources and existing traditional library resources in a coherent way for users. Examples of different ways in which this has been done are discussed, particularly in relation to the University of Nottingham (England) and other research libraries. New ways of working in library services have also been developed in many institutions, often accelerated by national initiatives. These include adopting project-based working, developing multi-skilled teams, and forming institutional consortia. The consequences of this are examined. UK-wide and institutional developments have thus far been most important, but there are now an increasing number of regional initiatives that are having an impact on library developments. These are briefly discussed. (Contains 19 references.) (Author/MES)

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Managing academic libraries in a digital world: institutional, regional and national developments in the UK

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Abstract

One of the important features of digital library development in UK Higher Education has been national co-ordination. Since 1994, the Higher Education Funding Councils have devoted considerable funds to a major research and development programme known as eLib (the Electronic Libraries Programme). National data centres have also been established which host datasets available to all Higher Education Institutions (HEIs) at nationally agreed prices. Most recently, the concept of the Distributed National Electronic Resource has been formulated to take these developments forward in a strategically co-ordinated way.

This paper discusses the impact national initiatives such as these have had on individual HEIs in the UK. Written from the perspective of an institutional library manager (and former eLib project leader), this paper examines the interface between local electronic library provision and national developments. Individual institutions have been active in taking forward the electronic library agenda both with and without earmarked government funding, but often the way in which this has been managed has been strongly influenced by the national strategy. The practical challenge has been to integrate locally provided digital resources with the national resources (plus, of course, existing traditional library resources) in a coherent way for users. Examples of different ways in which this has been done are discussed, particularly in relation to the University of Nottingham and other research libraries.

New ways of working in library services have also been developed in many

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institutions, once again often accelerated by national initiatives. These include adopting project-based working, developing multi-skilled teams and forming institutional consortia. The consequences of this are examined.

UK-wide and institutional developments have thus far been most important but there are now an increasing number of regional initiatives which are having an impact on library developments. These are briefly discussed.

Paper

One of the important features of electronic library development in the UK university sector has been national co-ordination. This paper focuses on the issue of national co-ordination and its relationship to institutions in four main ways:

1. some of the main features of national co-ordination of electronic library developments over the last ten years are identified
2. the impact it has had on individual institutions is analysed
3. some of the key issues associated with the interface between national agencies and local institutions are discussed
4. the increasingly important regional and international agendas in the UK are looked at briefly

It will be argued here based on the UK experience that national co-ordination of developments can result in considerable benefits but that the benefits rely on the national strategy being in touch with the needs of users in local institutions. National co-ordination is not 'a good thing' in itself, only when it helps to get the stuff to the users.

The issues are viewed in this paper from the perspective of a manager within an institutional library service with previous experience of working on a national funded electronic library project. However, it is hoped that the discussion may be of interest to others since some of the points raised may have relevance for those involved in regional co-ordination and consortia-based developments outside the UK.

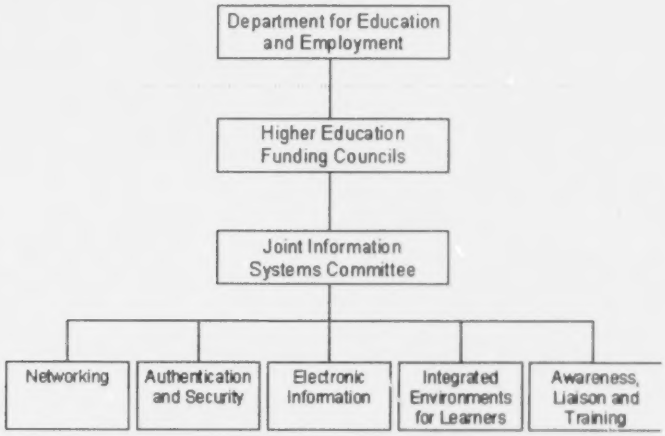
Background

The ways in which national co-ordination can be achieved (if at all) depend to a large extent on the wider national context. The UK has a tradition of national co-ordination of many kinds - political, economic, legal. The structure of UK government is well suited to UK-wide initiatives. Such initiatives are also common in the general library world in the UK, quite apart from electronic library developments. For example, the British Library provides a national inter-library loan system which satisfies the vast majority of traditional ILL requests in the UK.

National co-ordination is also a feature of the funding arrangements for the UK university ('higher education' or HE) sector. National co-ordination of HE electronic library development has been achievable in large measure because of this. As Figure 1 illustrates, all universities in the UK (with one or two notable exceptions) are funded by central government through the Department for Education and Employment (although some research grants are provided by other government departments). The DfEE works through the Higher Education Funding Councils (there are separate funding councils for England, Wales, Scotland and Northern Ireland) who allocate funds to institutions. The funding councils also place some HE funds in the hands of national co-ordinating bodies, one of which is the Joint

Information Systems Committee (JISC). JISC is jointly supported by all of the funding councils, and carries out work centrally for UK universities. It is the JISC (or its predecessor equivalents) which has been responsible for much of the co-ordinated electronic library development in the UK.

Figure 1: The funding structure for national developments



The mission of JISC is "to stimulate and enable the cost effective exploitation of information systems and to provide a high quality national network infrastructure for the UK higher education and research councils communities."[1] The basic rationale for JISC activity is that it "should demonstrably add value beyond that which could be achieved by institutions acting individually or collectively." It attempts to do this at present through five sub-committees: networking, authentication and security, electronic information, integrated environments for learners, and awareness, liaison and training.[2] These sub-committees represent a wide range of interests and activities, many of which have some impact electronic library developments. Of course, JISC is not the only body to provide funding for national electronic library developments. Other funding has come from the European Union or from commercial organisations; but JISC is the most significant.

Features of national co-ordination

The fact that most co-ordinating activity is being carried out by one body has not meant that national co-ordination in the UK is monolithic. On the contrary, it has occurred in different ways at different times and has therefore had different impacts on institutions. The various forms of UK national co-ordination may be summarised as follows:

- National infrastructure services
- Communications services
- Content services
- Negotiating services
- Middleware services
- Research and development funding
- Advisory and expert services
- Standards and guidelines
- Training and awareness services

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These are discussed in turn with most attention being given to content services and R&D funding.

National infrastructure services

The most significant service in this area is the Joint Academic Network (JANET). JANET is a high speed network linking universities to each other and the outside world. It has been in existence for many years and been continually upgraded. The latest version of SuperJANET (as it now known) provides a 2.5Gb core network initially, moving to a 20Gb core network by 2002.

JANET has provided a foundation for electronic library developments. For institutions, it has meant that access to the Internet has been heavily subsidised by the centre. Institutions have to fund their own local area networks, and moderate charges for transatlantic traffic are in place, but Internet use is still very inexpensive to institutions. Costs for transatlantic traffic have been kept to a minimum by the introduction of other complementary services, the national cache and the national mirror. Together these services are clear examples of the systemic coherence of service provision that is possible with national co-ordination.

For users in institutions, the Internet has always been free at the point of access. This has created a culture in UK HE of high Internet usage - an ideal climate for the development of electronic library services. JISC itself has attempted to encourage network usage of all kinds. For example, users have been encouraged to use the network for communication by the establishment of national services such as Mailbase which runs e-mail discussion lists for the UK university community.[3]

As well as providing the network and encouraging people to use it, JISC has also funded the development of three of Data Centres to manage content on it. The Data Centres, BIDS, MIMAS and EDINA[4], are housed by the Universities of Bath, Manchester and Edinburgh respectively. Between them they provide the national organisational infrastructure for electronic content provision. Since the establishment of the first Data Centre, BIDS in 1991, a number of significant datasets have been made available on the network, first via telnet then on the web.

Content and negotiating services

Large amounts of JISC investment have been concentrated on producing or delivering electronic content. This content has taken a large number of forms: "scholarly journals, monographs, textbooks, abstracts, manuscripts, maps, music scores, still images, geospatial images and other kinds of vector and numeric data, as well as moving picture and sound collections."[5] The content has been provided in different ways which have led to different institutional responses.

The main ways in which national content has been delivered are:

1. JISC (or a JISC-assisted service) has funded the production and delivery of content
2. JISC has acquired externally produced content and then
    i. managed and delivered content with its own user interface, or
    ii. managed and delivered content with the publisher's interface

3. JISC has negotiated access to the publisher's site
4. JISC has provided content for institutions to deliver

Firstly then, some content has been provided by JISC (or JISC-assisted services) where JISC has funded the production of the data itself and also its delivery. Examples of this are the Internet subject gateways, such as SOSIG, OMNI, and EEVL.[6] These services provide searchable metadata for quality web resources in certain subjects. They are based in various university institutions in the UK. For example, OMNI, the medical and health sciences gateway, is based at the University of Nottingham. The first group of these gateways were set up as projects under the eLib programme (see below) but are now run as ongoing services. Recently, they have been grouped together in JISC strategy into the Resource Discovery Network (RDN) and their work co-ordinated by a national team.[7] Gateways have been brought together into subject discipline clusters (so called 'hubs') and encouraged to expand their activities into becoming major subject portals. Action has also been taken to ensure that the gateways interoperate and have compatible collection policies.

The great advantage for institutions of the services funded and delivered by JISC is that they are free at the institutional level. JISC has often provided services which are of considerable value to institutional users, some of which would not have been provided by commercial suppliers. In some cases they have been taken up and used enthusiastically in institutions. In others, it must be said, take-up has been patchy. It has become clear that making stuff available is one thing, getting people to use it is quite another. Sometimes it is a problem with the services. Many were developed as projects on tight budgets and it has taken time to achieve a critical mass of material. Sometimes it is a problem of marketing. National services have often relied on institutions to market them to local users. This has not always happened.

As well as providing its own content, JISC has also provided access to the content of other (often commercial) providers. Sometimes a Data Centre takes a publisher's data and provides access to it via an interface developed by the Data Centre. Perhaps the best known example of this is the BIDS ISI service, which between 1991 and 2000 provided access to the ISI citation indexes. This service has had a major impact on UK HE. It has played an important role in encouraging staff and research students in particular to use the electronic library.

The take-up of BIDS ISI during the 1990s was remarkable.[8] In the early days, it was one of the first self-service online resources. Institutions were charged at a fixed annual rate (rather than 'pay as you go'), which meant that institutions have been able to encourage end users to carry out their own searches without having to worry about the bill. The system was designed by BIDS with UK HE in mind and was regularly improved in-line with feedback from the community. It also produced high quality documentation and marketing material. All of this created a sense of ownership within the UK university community - this may not have been case with a simple commercially provided resource. More recently, other services have been designed along the same lines. BIDS has provided the Ingenta service (aggregating full text e-journals from various publishers), EDINA has provided a range of services, such as Digimap (delivering UK mapping data).

However, some publishers have been unwilling to hand their data over in such a way and have insisted on delivering it through their own branded interface. This is now the case, for example, with the ISI indexes. BIDS ISI has now been replaced by Web of Science which has the standard ISI user interface. It is still a JISC-supported service and is now served from MIMAS. Similarly, EDINA provides access to a number of Ovid datasets, using the Ovid user interface. JISC has been involved in negotiating deals of this sort with a wide range of publishers.

On occasions, the role of JISC has been limited to negotiating for the community and has not included delivering the data. JISC negotiates access to a service but the publisher still manages the data at its own site. A recent example is the Oxford English Dictionary online service.[9] It is also true of a large number of e-journal deals for which JISC has set up a negotiating agency known as the NESLI (National Electronic Site Licence Initiative) service. The advantages for institutions of JISC-led negotiations are obvious but very important. A nationally negotiated package often results in a better deal for each individual institution. There are usually standardised licenses and access agreements. These factors have been crucial in encouraging UK universities to invest in electronic library services. However, there is a downside. This and the preceding model of national content provision mean that JISC has little control over the presentation of the data itself. Wide disparities of user interface and access method have often developed.

The final form of JISC-supported content provision is a new one. Here a JISC service produces digital content which is delivered at an institutional level. This category refers specifically to HERON (Higher Education Resources On Demand),[10] a new service which acts as a national clearing house for copyright permissions for course readings. In particular, it was set up to deal with electronic copyright. Once copyright permission has been obtained for material, HERON offers a digitisation service and supplies digitised files to institutions. Institutions then mount the files for local users.[11] Although institutions pay a fee for this service, the early signs are that this is considerably cheaper than each institution seeking permissions individually. Other key advantages of JISC-led development - economies of scale and the avoidance of duplication - also come into play here.

The categories of national content services in the UK are not watertight but they are indicative of the range of possibilities. Other models of content delivery may emerge, especially in relation to images and moving images in the future. The current models range from the position where institutions are consumers of free services to where they are purchasers of commercial services. Sometimes institutions benefit from getting free high quality data, sometimes a tailored interface, sometimes a better price. National co-ordination does normally play to their advantage. Take-up of content services offered on a national basis has however varied considerably. For reasons of price alone, take-up in any one institution of the range of services is only ever partial. On occasions, institutions have complained they are not aware of the range of resources available to them. Even when an institution does take a service there may be a problem of take-up within the institution. There are marketing responsibilities here. JISC has to market services to institutions and institutions have to market services to users. Both are essential if national provision is to be successful. Both could be improved.

Content coherence and the DNER

There is still a major problem. The problem of incoherence. It is a problem at both a national and institutional level. At a national level, it is clear that the range of services offered are to a large extent separate and self-contained. They are available in different places with different interfaces and different access methods. At an institutional level, the problem of incoherence is compounded by the fact that there is a wide range of electronic services (JISC and non-JISC) plus services in other formats. Institutions find it increasingly difficult to present users with a coherent view of the wide range of different resources available to them local and remote, printed and electronic. What can be done?

At a national level, there are a number of important developments. Perhaps the most significant of these is that national content services are now being managed at a strategic level in a more co-ordinated way. The concept of the Distributed National Electronic Resource (DNER) has been formulated to give these various national services a coherent identity. At the same time, JISC has appointed a DNER directorate to give developments strategic direction. JISC strategy documents characterise the DNER as "... a managed environment for accessing quality information resources on the Internet which are available from many sources." As such it encompasses the work of the Data Centres, RDN subject hubs, and JISC-provided and JISC-negotiated datasets. The DNER directorate has as one of its strategic aims to bring "coherence out of chaos". The opportunity is there for developments such as national collection development policy and access strategy. The former has existed in embryonic form for some time,[12] the latter is currently being developed. Access strategy involves the whole question of interoperability and interconnectivity - attempting to get services to release their value to a greater extent by enabling them to be used in a more integrated way. The possibilities of developing common user interfaces (using, for example, Z39.50), or of linking between bibliographic and full-text services are currently being considered. The amount of control the DNER team has over the data and its presentation varies, but it is hoped that by operating on a national scale the community can where necessary use its market power to influence data providers.

It is envisaged that the DNER will be accessed through various portals - based perhaps on subject or community, but institutional entry points into the services will always be amongst the most important. In providing these entry points to the DNER, institutions themselves are also addressing this issue of coherence. Most are currently taking a pragmatic view of the situation by trying to construct information landscapes for users based on their web sites. These information landscapes have to provide users with a view of the range of information resources available to them. DNER resources are only one part of the picture. At the University of Nottingham, we have recently redesigned the Library Services web site to act as a gateway to the range of resources available to users.[13] The site provides access to the web OPAC (Aleph) and two other web-enabled databases. These provide access to 'Subject Resources' (a collection of key resources in all formats - web resources, CD-ROMs, printed materials and so on) and e-journals. The site is based on a subject approach. Rather than listing material by format or source, users are encouraged to look at material by subject. It is hoped that this will enable users to take a more coherent view of the resources.

This kind of pragmatic response is important but only partial. Further research needs to be carried out on how institutions can tackle this problem in the medium term. It is interesting that JISC has financed a number of 'hybrid library' research and development projects to address the issue of integration and coherence (see below). The DNER directorate has also begun to make efforts to help institutions provide access to data over which it has direct control by local means. The new pilot service, RDN-i allows institutions to cross search all of the subject gateways simultaneously, providing the search form and results from within the institutional web interface. This is an interesting early example of where national and institutional efforts to achieve coherence have come together.

Middleware services

Another way in which the problem of coherence from the user perspective has been

addressed is in the development of middleware initiatives. Perhaps the most significant of these is the national authentication service, ATHENS. ATHENS provides an important standard authentication front door to the DNER. As many as 70 services now have ATHENS authentication. Because of the growing importance of the ATHENS service, many commercial data providers have made their services ATHENS-compliant. The service has been taken up enthusiastically by institutions. There are now 700,000 ATHENS user accounts in 300 institutions. Although this is a national service, much of the administration is devolved to institutions. This is however considered to be acceptable simply because the benefits to the user are considerable. They can access a wide range of resources using only one username and password.

R&D funding

As well as providing a series of 'hard' services (the network, content, authentication), JISC has also supported a number of 'soft' initiatives to complement the services. One of these is research and development funding. Perhaps the most significant programme in this area has been eLib, the Electronic Libraries development programme.[14] This programme was launched in 1994 and is due for completion at the end of 2000. It took the form of a nationally co-ordinated programme with a central directorate which provided support for projects and monitored their development. Projects were carried out within individual or consortia of institutions but were funded centrally by JISC along with institutional contributions. Institutions went through a competitive bidding process for the available funds and bids had to be focused in broad areas defined centrally.[15]

The first phases of eLib (phases 1 and 2) concentrated on a number of different areas:

- Electronic publishing: including projects developing e-journals, pre-prints, electronic short loan, on-demand publishing, digitisation, digital images, quality assurance
- Resource access: including document delivery, access to network resources
- Training and awareness
- Supporting studies

In total there were about 60 projects, accounting for £15 million between 1994 and 1998. The final phase of eLib built on many of the emerging lessons of phases 1 and 2. In particular, it attempted to address the issues of information coherence and service implementation. How could these separate technologies and services be taken forward in a more integrated way? Phase 3 had the following strands:

- 'Hybrid libraries': aiming to set up models and exemplars of how libraries can be given coherence
- 'Clumps': implementing Z.39.50 to create virtual union catalogues
- Digital preservation: investigating issues, promoting awareness and making recommendations
- Projects to services: allowing selected phase 1 and 2 projects to continue their service with the aim of becoming self-supporting

In all there are 20 projects, funded to the tune of £5 million. Most of these projects are still due to report but it is clear that they have already begun to have an impact on the technical development and strategy of JISC and individual institutions. Aspects of DNER strategy have for example clearly been influenced by eLib outcomes. The influence of directed R&D on national strategy is set to continue. Although, the name

eLib is being dropped, new R&D projects to enhance the DNER are currently being set up. JISC is investing a further £14 million in this over the next three years.

The impact of eLib on institutions still needs to be formally analysed but it is certainly clear that it has had a profound affect at a local level. Since over 100 higher education institutions have been directly involved in eLib projects, the impact has also been widespread. Some of the consequences of eLib at the institutional level can already be identified:

- Many successful JISC services (such as subject gateways and HERON) grew out of early eLib projects.
- Many of the projects proved to be genuinely beneficial to the institutions which housed them by enhancing the service.
- eLib concentrated on practical development work rather than pure research. This meant that many technologies could be quickly applied by others.
- eLib has acted as catalyst for electronic library development in institutions apart from the projects themselves. Many of the concepts involved and many of learning outcomes from projects have filtered into library organisations. eLib projects had a brief to disseminate their work as widely as possible. Many have done this successfully and have become exemplars for other local initiatives.
- eLib had the effect of creating new technical and managerial skills and a newly skilled group of staff in UK HE who have been great benefit to institutions.
- eLib had major impact, amongst all staff, on the culture of organisations and the academic library and information profession.
- It has often been a useful focus for library and computer service staff to work together often in multi-skilled teams.
- eLib has had the affect of improving project planning and working in institutions.
- With externally funded projects comes bidding, it is noticeable that a bidding culture has also developed.
- Because some institutions become good at bidding and others do not, eLib did in some respects lead to the development of 'haves' and 'have nots'. Some institutions were successful in attracting funding and running multiple projects, others were not.
- Many eLib projects were implemented by consortia. The programme has encouraged partnerships between HEIs.
- eLib has also enabled institutions to engage in a dialogue with commercial suppliers. Some participated as partners in projects, others have simply monitored technical outcomes. In either case, eLib has helped to affect their agenda and influenced technical direction.

Some have argued that eLib activity might have been more co-ordinated. Amongst the projects, work was sometimes duplicated. There were, for example, several similar 'electronic short loan' projects. However, it is worth noting that some projects working in the same areas were more successful than others. Funding a number of projects in the same areas has led to the opportunity to make evaluative comparisons. More co-ordination might have been achieved in other areas, however. At a central level, eLib was run in parallel with another JISC R&D programme, JTAP (JISC Technology Applications Programme). It is ironic that although both programmes were co-ordinated nationally and both had a great deal in common, they were run by different JISC committees and never fully co-ordinated with each other! It is encouraging that the recent JISC calls which succeed eLib and JTAP have involved more co-ordination.

Other national services

As programmes like eLib progressed and as institutions launched their own electronic library initiatives, it became clear that similar issues were being raised in many places. Partly in response to this, JISC has funded a number of advisory and expert services to serve the national community. These include the HEDS (Higher Education Digitisation Service), TASI (Technical Advisory Service on Images) and UKOLN (UK Office for Library and information Networking). These services have different remits but carry out research, produce documentation, act as consultants, and in some cases carry out practical work for institutions. Many of these are free to institutions.

Linked to this, JISC has also supported the development of a series of national guidelines and standards. For example, JISC has produced guidelines for the production of institutional information strategies.[17] Various JISC agencies have also been active in contributing to international standards such as Dublin Core and Z39.50.[18] Finally JISC agencies have been set up to carry out training and marketing activities. One example of this is Netskills. Initially an eLib project, Netskills[19] is an Internet training service, producing online training packages, documentation and carrying out training activities.

Once again these services have supplemented and supported institutional provision. Often they have provided a valuable way of avoiding duplicating work or have saved institutions money by providing expert assistance at subsidised rates. These services have begun to play a significant role in embedding nationally co-ordinated services in local implementations. Local implementations are however going at different speeds and with different emphases. The relationship between the central and the local can always be strengthened to improve this.

National and institutional issues

Having discussed national developments and their immediate impact on institutions, it is now possible to draw together some key issues. There are key benefits at the institutional level of nationally co-ordinated developments in the UK. Institutions benefit from a wide range of services (infrastructure, content, middleware, expert support and so on) which are inexpensive or even free. These services are often tailored to their needs. Institutional provision is usually simplified by standard national licences and access agreements. These are significant benefits, but a number of issues remain which require further discussion.

Perhaps most importantly, institutions and co-ordinating bodies need to maintain an awareness of the limitations of co-ordination. It is not a panacea. It will not solve all of an institution's problems. It should aim to solve some of them and should always be designed to support and enhance the institutional provision. As such it should stay in touch with the needs and concerns of institutions.

Any attempt to build a national electronic library collection in particular needs to have institutional requirements at its centre. For example, there is little use in striving for a coherent, self-contained collection at the national level when access to it by users in institutions will always be partial and when nationally provided resources will only ever be part of the totality of information resources available to them in their institutions. The national collection should be built to ensure it can be used in the way institutions need to use it. Institutions can be assisted in various technical and organisational ways to give their users access to national services.

The issue of coherence also should continue to be seriously addressed at both the national and the institutional level if users are to make full use of resources available. This is certainly beginning to happen at the national level as well as locally.

The problem of incoherence is not one that can be solved by the higher education community alone, of course. It requires the responsiveness of commercial providers, many of whom operate at a multinational level. How far should a national agency go in trying to intervene in the market? Should national co-ordination simply be involved in negotiating deals on behalf of institutions? Should it act as a corrective to the market by setting up services which the market will not? Should it fund research and development work which may then be used by the commercial suppliers (or does this amount to doing their work for them)? Should it encourage commercial suppliers to provide certain services (such as Z39.50) which they may not otherwise do? JISC has certainly answered in the affirmative to many of these questions; if it is to continue to be as active there has to be a clear strategy and sufficient funding.

If national agencies are involved in setting up non-commercial services, the issue of sustainability becomes crucial. JISC has attempted to encourage some services, like the subject gateways to become self-supporting (through sponsorship and advertising). But the success of this has been variable. A humanities service will always find it more difficult to gain commercial sponsorship than say a business studies one. If a resource is worth having, is it not worth funding? If so, who should fund it? Many institutions would claim that implementing nationally funded projects or housing nationally assisted services actually results in substantial hidden costs locally which are difficult to justify within the institution.

This is not just a financial question. In many other ways the demarcation line between the national agencies and the institutions is unclear. Who is responsible for what? At present, for example, who is responsible for developing e-print archives? Should institutions wait for this be co-ordinated at a national level or should they begin investing locally?

Some have argued that too much national co-ordination stifles local innovation. It has been suggested, for example, that there is a danger of a 'vision gap' developing amongst some senior library managers in institutions. Instead of seeing what needs to be done and driving developments themselves, they may be inclined to sit back and wait for things to happen or at least be told what to do. National agencies need to guard against this over-reliance on their work by ensuring the agendas of national bodies are kept in synchronicity with institutional needs and that it is set as much bottom up as top down. Of course, national agencies, such as JISC are largely composed of representatives from institutions but it needs to ensured that they put in place clear mechanisms for communicating with institutional policy makers more widely.

This is particularly important now since institutional library managers increasingly need to ensure that electronic library strategy fits in with other institutional aims. For example, there are pressures in most UK institutions at present to develop sophisticated virtual learning environments for students. The question of how the electronic library fits into these learning environments needs to be addressed. Once again, national strategy needs to ensure that these institutional concerns are taken into account.

It has already been pointed out that providing resources is one thing, getting them to be used is quite another. National initiatives have often suffered from patchy implementation in institutions. As well as ensuring that communication between institutions is enhanced, marketing to users also needs to be improved. This applies at both a national and institutional level. National services are however best marketed at

an institutional level. Strategies need to be put in place by national agencies to assist institutional library services in marketing services to their users.

The complexities of national co-ordination need to be managed carefully if it is to be successful. In the UK considerable progress has been achieved through national co-ordination but the balance between national strategy and institutional implementation needs to be kept under constant review. This can only be achieved where institutions and national agencies are working in partnership to serve users.

The future: regional and international developments

The JISC strategic aims for 2001 to 2005 include "regionalisation" and "globalisation" of its activities. It is yet to be seen precisely what these aims will mean on the ground but they could potentially have a profound effect.

The regional agenda is one which is affecting all aspects of UK society at the moment. Greater powers are beginning to be devolved to the different countries of the UK (not strictly 'regions') and the regions of England. JANET has increasingly become based on a series of Metropolitan Area Networks which are supported regionally. Regional co-operation in library development of all kinds is becoming more common. Many regions may soon be able to lead on developments which may benefit their particular user communities. There is the distinct possibility that the 'evenness' of national provision at present may be changed as different parts of the UK advance at different rates. It will be interesting to see how the national and regional agendas interact.

Whilst there are pressures to devolve some activities to a regional level, there are equally others to operate on an international level. Many aspects of electronic library development do not know national borders. Technical standards, for example, have to be worked out on an international basis. JISC is already active in this area. Partnerships in research and development, and service delivery are also already beginning to happen.[20] Since many of the advantages of national co-ordination may also apply to international co-ordination these developments should be encouraged. It should be emphasised however that the needs of users in the institutions must be at the centre of these developments. Their success should be judged by their impact on the real lives of university staff and students on the ground.

Conclusion

User needs should be at the heart of electronic library development. In the UK, major developments at a national level have enabled institutions to improve the service they give to their users. With the newly co-ordinated DNER strategy, this is set to continue. It is important that this strategy will not just involve enlargement of the collections but also improvements in the ways national agencies assist institutions to market and deliver the services. The relationship between the national agencies and institutions is crucial, but even more important is the relationship between users and service providers (institutional and national). The national-institutional partnership is worthwhile because it is a valuable way of improving the service.

Abbreviations

BIDS - Bath Information Data Services
DfEE - Department for Education and Employment
DNER - Distributed National Electronic Resource
EDINA (Edinburgh University Data Library)
EEVL - Edinburgh Engineering Virtual Library
eLib - Electronic Libraries Programme
HE - Higher Education (university level education)
HEI - Higher Education Institution
HERON - Higher Education Resources On Demand
JANET - Joint Academic Network
JISC - Joint Information Systems Committee
JTAP - JISC Technology Applications Programme
MIMAS - Manchester Information and Associated Services
NESLI - National Electronic Site Licence Initiative
OMNI - Organising Medical Networked Information
RDN - Resource Discovery Network
SOSIG - Social Science Information Gateway
UKOLN - UK Office for Library and information Networking

Notes

1. See http://www.jisc.ac.uk

2. The structure of JISC of course changes from time to time. The names of national committees have also changed. This paper will refer to JISC where this is taken to include parts of JISC, JISC-assisted services or their predecessor equivalents.

3. See http://www.mailbase.ac.uk

4. BIDS (Bath Information and Data Services) http://www.bids.ac.uk/, MIMAS (Manchester Information and Associated Services) http://www.mimas.ac.uk/, EDINA (Edinburgh University Data Library) http://edina.ed.ac.uk/

5. 'Adding Value to the UK's Learning, Teaching and Research Resources: the Distributed National Electronic Resource (DNER).' JISC working paper, October 1999. http://www.jisc.ac.uk/pub99/dner_vision.html

6. SOSIG (Social Science Information Gateway) http://www.sosig.ac.uk/, OMNI (Organising Medical Networked Information) http://omni.ac.uk/, EEVL (Edinburgh Engineering Virtual Library) http://eevl.ac.uk/

7. http://www.rdn.ac.uk/

8. For a discussion of the success of BIDS ISI see Terry Morrow 'BIDS - the growth of a networked end-user bibliographic database service'. Program, 29, 1, 1995, pp. 31-41; Stephen Pinfield 'The use of BIDS ISI in a research university: a case study of the University of Birmingham'. Program, 32, 3, 1998, pp. 225-240.

9. http://www.nesli.ac.uk

10. http://www.heron.ac.uk

11. The process is described at http://builder.bham.ac.uk/documentation/electronicshortloan/esl-heron/index.asp

12. For the DNER collection development policy see 'An Integrated Information Environment for Higher Education: Developing the Distributed National Electronic Resource (DNER).'JISC working paper, December 1997. http://www.jisc.ac.uk/cei/dner_colpol.html

13. http://www.nottingham.ac.uk/library

14. http://www.ukoln.ac.uk/services/elib//

15. See Chris Rusbridge "Towards the hybrid library" D-Lib Magazine, July/August 1998, http://www.dlib.org/dlib/july98/rusbridge/07rusbridge.html

16. HEDS (Higher Education Digitisation Service) http://heds.herts.ac.uk/, TASI (Technical Advisory Service on Images) http://www.tasi.ac.uk/, and UKOLN (UK Office for Library and information Networking) http://www.ukoln.ac.uk/

17. http://www.jisc.ac.uk/info_strat/

18. See for example work carried out by the Interoperability Focus at http://www.ukoln.ac.uk/interop-focus/ and by UKOLN at http://www.ukoln.ac.uk/metadata/

19. http://www.netskills.ac.uk/

20. For example JISC has recently funded a number of R&D projects jointly with the National Science Foundation in the USA.

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